# PRELIMINARY HAZARD ANALYSIS
# FOR
# SHINE MOTOR CORPORATION PTY LTD
# 8 NOONAN ROAD, INGLEBURN NSW 2565

***Prepared for:*** Shine Motor Corporation Pty Ltd

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# EXECUTIVE SUMMARY

Benbow Environmental (BE) was commissioned by Shine Motor Corporation Pty Ltd to prepare a Preliminary Hazard Analysis (PHA) for the regularisation of the existing metal recycling facility located at 8 Noonan Road, Ingleburn NSW 2565. The recovery of metal including steel, aluminium, ferrous and non-ferrous materials from various scrap items would enable manufacture of new products from recycled materials.

Under Chapter 3 (hazardous and offensive development) of State Environmental Planning Policy (Resilience and Hazards) 2021, the facilities volumes of chemicals and dangerous goods do not trigger the thresholds in accordance with the Preliminary Risk Screening assessment undertaken in accordance with *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33, NSW Government Department of Planning (2011)* provided in section 3 of this PHA. Therefore, a PHA is not required due to the storage of chemicals and dangerous goods on site.

The site does not store more than 50 $m^3$ of combustible waste in accordance with the definitions with the NSW Fire and Rescue 2020 Fire Safety in Waste Facilities guideline, therefore the Fire Safety in Waste Facilities guideline does not apply.

Fires do occur in scrap metal facilities. This PHA has been prepared in accordance with the documents entitled *"Multi-Level Risk Assessment"*, "*Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning"* (HIPAP No. 4)" and the "*Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis"* (HIPAP No. 6), all published by the Department of Planning.

Main hazards from the site are *metals with combustible contaminants* which is the mixed metal waste stockpile prior to sorting and *plastic* which is primarily the stockpile of plastic insulation from wire stripping. These were assessed for further quantitative analysis.

The assessment has been carried out in accordance with the DoP guidelines and has determined that the operation of the proposed development meets the criteria outlined in the HIPAP No. 4 *Risk Criteria for Land Use Safety Planning* and would not cause any risk, significant or minor, to the community, with the recommended safeguards in place.

Throughout the preparation of this PHA, it has been determined that the proposed development meets all the safety requirements stipulated by the Department of Planning (DoP) and hence would not be considered an offensive or a hazardous development.

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# 1. INTRODUCTION

Benbow Environmental (BE) has been commissioned by Shine Motor Corporation Pty Ltd to prepare a Preliminary Hazard Analysis (PHA) for the regularisation of the existing metal recycling facility located at 8 Noonan Road, Ingleburn NSW 2565. This involves the recovery of metal including steel, aluminium, ferrous and non-ferrous materials from various scrap items would enable manufacture of new products from recycled materials.

The site is located at the edge of a well-established industrial area. The suburb of Ingleburn is a mixture of industrial, residential and environmental areas, all encompassing a land mass of about a third. Warehouses are located around the site, and the Bunbury Curran Creek runs adjacent to the southern boundary.

The PHA has been prepared in accordance with the documents entitled *"Multi-Level Risk Assessment"*, "*Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning"* (HIPAP No. 4)" and the "*Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis"* (HIPAP No. 6), all published by the Department of Planning.

A PHA has been prepared to ensure that all potential hazards and risks from the proposed site are appropriately identified, managed and controlled (if controls are deemed necessary).

## 1.1 SCOPE OF WORKS

The preparation of this report has been limited to the following:

- Conduct the Preliminary Hazard Analysis (PHA) assessment by:
  - Review of the proposed development's activities and site operations;
  - Assessment of the proposed development with consideration to State Environmental Planning Policy (Resilience and Hazards) 2021 and compliance with SafeWork requirements and the Work Health and Safety Regulation 2017;
  - Evaluation of any potential hazards imposed by the proposed site operations on the surrounding environment and communities;
  - Making recommendations on the relevant prevention/protection strategies necessary to minimise the impact and risk of human fatalities, property damage and environmental pollution; and
- Preparation of a Preliminary Hazard Analysis (PHA) report outlining the methodology and outcomes of the assessment.

# 2. OVERVIEW OF THE DEVELOPMENT

## 2.1 SITE DESCRIPTION

The proposed site is located at 8 Noonan Road, Ingleburn NSW 2565 (Lot 25 DP809258), within the City of Campbelltown Council local government area. The site has an area of approximately 0.3 ha. The regional context of the site is presented below in Figure 2-1.

An aerial image of the site displaying the lot boundary is shown in Figure 2-2. The local areas land use zoning is presented in Figure 2-3.

Figure 2-1: Regional context of the Site

**Source:** Six Maps (2014)

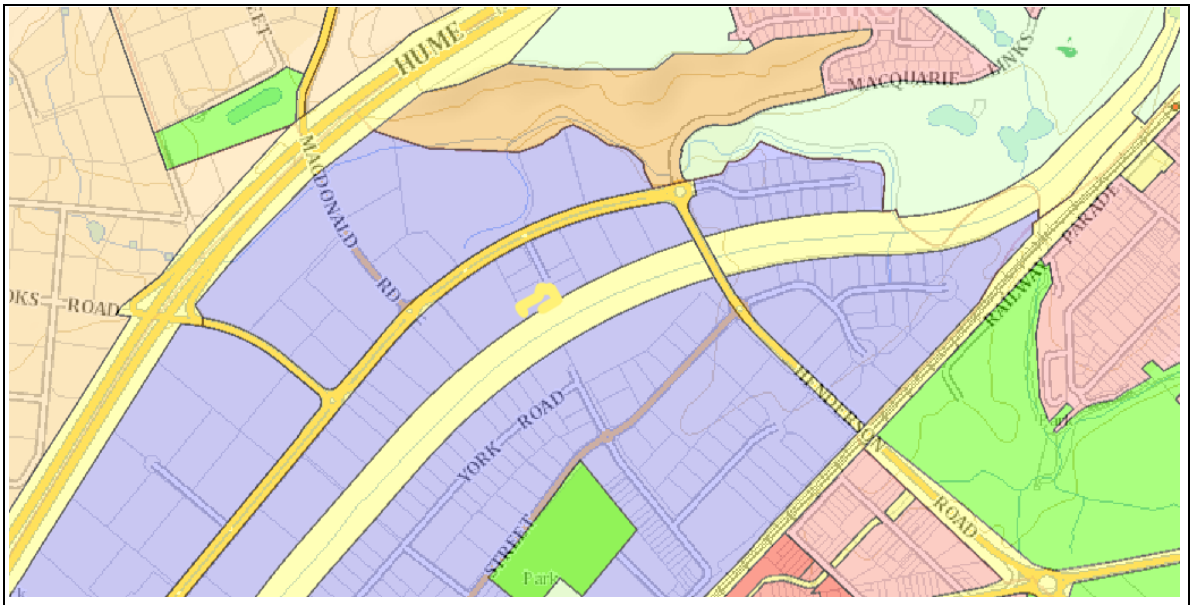
| | | |
|---|---|---|
| ↑N<br>Not to scale | **LEGEND**<br>Site Boundary | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Aerial Image of the Site

**Source:** Six Maps (2014)

| | | |
|---|---|---|
| ↑N<br>Not to scale | **LEGEND**<br>Site Boundary | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-3: The Site and Surrounding Land Zones




**Source:** ePlanning Spatial Viewer (2024)

**LEGEND**

Site Boundary

- E3 - Productivity Support
- E4 - General Industrial
- E5 - Heavy Industrial
- EM - Employment
- EP - Employment
- ENP - Environment Protection
- ENT - Enterprise
- ENZ - Environment and Recreation

N

Not to scale

Benbow Environmental
25-27 Sherwood Street,
Northmead NSW 2152

### 2.1.1 Nearest Residential Receivers

The nearest sensitive receivers considered in this PHA are provided in the following table corresponding locations are provided in the following figure.

Table 2-1: Nearest Sensitive Receivers

| Receptor ID | Address | Lot & Plan | Approximate Distance of Dwelling from Site Boundary | Type |
|---|---|---|---|---|
| **R1** | 77 Bruce Ferguson Avenue, Bardia | Lot 4083/DP1200785 | 680 m N | Residential |
| **R2** | 2 Governors Way, Macquarie Links | Lot 22/DP285479 | 820 m NE | Residential |
| **R3** | 27 Waratah Crescent, Macquarie Fields | Lot 62/SP30344 | 1130 m E | Residential |
| **R4** | 2 Gordon Avenue, Ingleburn | Lot 70/DP7775 | 780 m SE | Residential |
| **R5** | 1 James Street, Ingleburn | Lot CP/SP19595 | 760 m SE | Residential |
| **R6** | 35 Lancaster Street, Ingleburn | Lot B/DP446345 | 700 m SW | Residential |
| **R7** | 7 Keating Place, Denham Court | Lot 109/DP260767 | 790 m NW | Residential |
| **R8** | Macquarie Links Drive, Macquarie Links | Lot 2/DP270152 | 410 m E | Active Recreation |
| **R9** | Memorial Avenue, Ingleburn | Lot 123/DP46569 | 350 m S | Active Recreation |
| **R10** | 6 Noonan Road, Ingleburn | Lot 24/DP809258 | Adjacent N | Industrial |
| **R11** | 3 Noonan Road, Ingleburn | Lot 26/DP809258 | 40 m E | Industrial |
| **R12** | 19 Aero Road, Ingleburn | Lot 15/SP76296 | 90 m S | Industrial |
| **R13** | 2-4 York Road, Ingleburn | Lot 100/DP878749 | 90 m S | Industrial |
| **R14** | 38 Williamson Road, Ingleburn | Lot 30/809258 | Adjacent W | Industrial |

Figure 2-4: Receiver Locations

## 2.2 PROPOSED DEVELOPMENT

The proposal seeks to change the use at 8 Noonan Road, Ingleburn from a Motor Vehicle Repair Station and associated Truck Wash to a Waste Management Facility (Resource Recovery Facility) that use the existing warehouse for scrap metal yard. The existing warehouse and office building will be used, however an awning to cover the southern boundary will need to be constructed. The proposed development would continue existing operations as a scrap metal recycling facility.

## 2.3 DESCRIPTION OF OPERATIONS

The site currently operates as a scrap metal recycling facility. Materials from commercial and residential developments are brought to site, where materials are sorted and consolidated based on type of material and processing requirements.

The primary business activity of the proposed development is the collection and re-sale of scrap metal. The development is proposed to have an annual throughput of approximately 4,800 tonnes (reflecting averages of approximately 92 tonnes per week). This material is sourced from both local businesses including other scrap metal facilities and the general public, who deliver it to the site.

Most materials received on site are pre-sorted and simply baled and stored/consolidated with the same type of material until the appropriate quantity is acquired for export. Mixed metal waste received on site is sorted and stockpiled, either for immediate re-sale or for minor on-site processing (i.e. stripping insulation from wiring or baling) prior to re-sale. The bulk of the scrap metal delivered to site is proposed to be re-sold for recycling, with only a small component unable to be re-sold (primarily PVC insulation from wiring) The material unable to be re-sold is safely disposed by waste management company BINGO Pty Ltd.

## 2.4 Operating Hours

Application is sought for the following hours of operation:

- Monday to Friday: 7:00am – 5:00pm;
- Saturday: 7:00am – 1:00pm; and
- Sunday and public holidays: Closed

## 2.5 Equipment

Onsite equipment includes a baler, wire stripper, forklift and excavator.

**Baler**
The baler is used to compress sorted metals into cubes for transport. The primary metals that are baled are aluminium and stainless steel.

**Wire stripper**
The wire stripper is used to remove insulation of high-quality copper wires.

**Forklifts**
Forklifts are used for material handling loading and loading of palletised or baled materials

**Excavator**
The excavator is used for the material handling of receipt of materials prior to baling and loading of bins for materials that are not baled or palletised.

## 2.6 Chemical Storage

The dangerous goods that would be stored on site would be:

- 12 cylinder of LPG (Class 2.1) for mobile equipment use in two cages outside (~Total 430L Class 2.1); and
- Lead-acid batteries. 2 pallets wrapped and stacked (2-batteries high on each pallet) outside (transit storage) and one pallet in loading process inside the building in the process of being transported. (~Total acid 1,200L Class 8).

No other fuel storage is proposed. No defueling occurs on site.

## 2.7 Material Storage

Material quantities for the site varies depending on the incoming materials. Typical storage configuration is presented below in the following table:

Table 2-2: Material Storage – Estimated Quantities

| Material Type | Location | Estimated Volume m3 | Estimated Mass (tonnes) |
|---|---|---|---|
| Mixed metal waste prior to sorting | Stockpile inside | 3 | 1.5 |
| Aluminium pre-baled | Stockpile outside | 7 | 3.5 |
| Aluminium baled | Stacked outside | 15 | 13.5 |
| Stainless steel pre-baled | Stockpile inside | 6 | 4.2 |
| Stainless steel baled | Stacked outside | 15 | 42 |
| Wires pre-stripped | Stockpile inside | 2 | 1 |
| Insulation (plastic) + Wires unsuitable for stripping (poor quality) – with plastic | Stockpile outside | 4 | 2 |
| Copper | Skip bin inside building | 3 | 1.5 |
| Car Engines | Existing wash bay | 2 | 1 |
| Radiators | Wrapped pallets | 2 | 1 |
| Car wheels (not tires) | Stockpile outside | 5 | 2 |
| Batteries | Pallet inside and external transit storage | 1.5 | 1.5 |
| Aircon heat exchangers pre-baled | Stockpile outside | 2 | 1.6 |
| Aircon heat exchangers baled | Stacked outside | 5 | 12.5 |
| **Total** | | **72.5** | **89** |

# 3. STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021

This SEPP consolidates and repeals the provisions of the following relevant SEPPs:

- SEPP 33 – Hazardous and Offensive Development (Chapter 3); and
- SEPP 55 – Remediation of Land (Chapter 4)

It is noted that no policy changes have been made and the SEPP consolidation does not change the legal effect of the existing SEPPs, the consolidation is administrative only.

Under Chapter 3 (hazardous and offensive development), the facility will require minor volumes of chemicals and dangerous goods to be stored on site for ancillary purposes and, therefore, is unlikely to trigger the thresholds listed in Chapter 3 of SEPP (Resilience and Hazards) 2021. This report provides a Preliminary Risk Screening undertaken in accordance with *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33, NSW Government Department of Planning (2011).*

## 3.1 ONSITE STORAGE

A preliminary risk screening of the chemicals stored at the site in accordance with State Environment Planning Policy (Resilience and Hazards) 2021 - Chapter 3 Hazardous and Offensive Development (SEPP) and *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33, NSW Government Department of Planning (2011)* has been undertaken, with results provided below.

Table 3-1: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 1.1 | Assessed by reference to figure 5 of applying SEPP | Explosives | None | None | No |
| Class 1.2 | 5 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 1.3 | 10 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 2.1 | (LPG only — not including automotive retail outlets[1])<br><br>10 tonne or 16 $m^3$ if stored above ground<br><br>40 tonnes or 64 $m^3$ if stored underground or mounded | Flammable Gases | None | 0.43 $m^3$ | No |

Table 3-1: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | (Excluding LPG) Assessed by reference to figure 6 of applying SEPP | Flammable Gases Pressurised | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 7 of applying SEPP | Flammable Gases liquified under pressure | None | None | No |
| Class 2.2 | Not relevant | Non-flammable, non-toxic gases | None | None | No |
| Combustible Liquid C1 | Not relevant | Combustible liquid with flashpoint of 150°C or less | None | None | Not relevant |
| Combustible Liquid C2 | Not relevant | Combustible liquid with flashpoint exceeding 150°C | Oils, lubricants, for equipment maintenance | Minor quantities | Not Applicable |
| Class 2.3 | 5 tonne | Anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale | None | None | No |
| | 1 tonne | Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg | None | None | No |
| | 2.5 tonne | Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg | None | None | No |
| | 100 kg | Liquefied gas kept in or on premises | None | None | No |

Table 3-1: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 100 kg | Other toxic gases | None | None | No |
| Class 3 | Assessed by reference to figures 8 & 9 of applying SEPP | Flammable liquids PG I, II and III | Paints, solvents | None | No |
| Class 4.1 | 5 tonne | Flammable Solids | None | None | No |
| Class 4.2 | 1 tonne | Substances liable to spontaneous combustion | None | None | No |
| Class 4.3 | 1 tonne | Substances which, in contact with water, emit flammable gases | None | None | No |
| Class 5.1 | 25 tonne | Ammonium nitrate – high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary | None | None | No |
| | 5 tonne | Oxidising substances, and ammonium nitrate elsewhere | None | None | No |
| | 2.5 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers | None | None | No |

Table 3-1: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 1 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg | None | None | No |
| | 5 tonne | Any other Class 5.1 | None | None | No |
| Class 5.2 | 10 tonne | Organic peroxides | None | None | No |
| Class 6.1 PGI | 0.5 tonne | Toxic substances | None | None | No |
| Class 6.1 PGII & III | 2.5 tonne | Toxic substances | None | None | No |
| Class 6.2 | 0.5 tonne | Infectious substances, includes clinical waste | None | None | No |
| Class 7 | All | Radioactive Material, should demonstrate compliance with Australian codes | None | None | No |
| Class 8 PGI | 5 tonne | Corrosive substance | None | None | No |
| Class 8 PGII | 25 tonne | Corrosive substance | None | None | No |
| Class 8 PGIII | 50 tonne | Corrosive substance | Lead Acid Batteries | 1.2 | No |

The dangerous goods stored on-site **do not trigger** the requirement for a preliminary hazard analysis.

## 3.2 TRANSPORT QUANTITIES

"Transportation Screening Thresholds" from *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33, NSW Government Department of Planning (2011)* are shown below.

In consideration to the quantities expected onsite (described in Section 3.2), these amounts would not require vehicle movements or loads that trigger the SEPP.

Table 3-2: Transportation Screening Thresholds

| | Vehicle Movements | | Minimum quantity* | |
|---|---|---|---|---|
| | Cumulative | Peak | per load (tonne) | |
| Class | Annual *or* | Weekly | Bulk | Packages |
| 1 | see note | see note | see note | |
| 2.1 | >500 | >30 | 2 | 5 |
| 2.3 | >100 | >6 | 1 | 2 |
| 3PGI | >500 | >30 | 1 | 1 |
| 3PGII | >750 | >45 | 3 | 10 |
| 3PGIII | >1000 | >60 | 10 | no limit |
| 4.1 | >200 | >12 | 1 | 2 |
| 4.2 | >100 | >3 | 2 | 5 |
| 4.3 | >200 | >12 | 5 | 10 |
| 5 | >500 | >30 | 2 | 5 |
| 6.1 | all | all | 1 | 3 |
| 6.2 | see note | see note | see note | |
| 7 | see note | see note | see note | |
| 8 | >500 | >30 | 2 | 5 |
| 9 | >1000 | >60 | no limit | |

***Note:*** *Where proposals include materials of class 1, 6.2 or 7, the Department of Planning should be contacted for advice. Classes used are those referred to in the Dangerous Goods Code and are explained in Appendix 7.*

** If quantities are below this level, the potential risk is unlikely to be significant unless the number of traffic movements is high.*

# 4. FIRE SAFETY IN WASTE FACILITIES

The Fire Safety in Waste Facilities guideline was published by the Fire and Rescue NSW in 2020. Fires in scrap metal facilities are do occur despite metal being considered non-combustible. This is evidenced by a review of news articles which demonstrates that they occur reasonably often. The cover image of the Fire Safety in Waste Facilities guideline is of a scrap metal facility on fire.

The definition of combustible waste material is under this guideline is:

> ***combustible waste material*** *– means any solid waste material that can readily ignite and burn under normal conditions, which includes:*
> - *paper and cardboard*
> - *wood and wood-based products*
> - *plastic*
> - *rubber*
> - *textiles*
> - *waste derived fuels such as reduce derived fuels (RDF), solid recovered fuels (SRF) and processed engineered fuels (PEF)*

The application of the guideline states:

> *This guideline does not apply to any waste facility, or areas of, that are being used for:*
> *a) landfill (but, may apply to a waste facility on the landfill site)*
> *b) composting, including in-vessel, green waste and anaerobic digestion*
> *c) liquid waste treatment*
> *d) hazardous chemicals or special waste treatment (e.g. waste tyres),, or*
> *e) less than 50 $m^3$ of combustible waste material.*

The site contains significantly less than 50m3 of combustible waste material therefore this guideline does not apply. However, the combustible wastes definition will be utilised for scenarios for further analysis in accordance with the HIPAP guidelines in the following sections of this PHA.

# 5. HAZARD ANALYSIS

The potential for a site or a development to be considered as potentially hazardous or offensive industry are assessed by considering the amount of hazardous materials stored on site, often to be dangerous goods. However, in this particular case, in addition to storage of diesel fuel on site, the LPG canisters were considered to be the additional hazardous materials of concern that could potentially cause the proposed development to be hazardous or offensive.

The following list provides the relevant guidelines published by the NSW Department of Planning (DoP) that are required to be referenced (including referencing for the purpose of discussion) or be adhered with as part of preparing this assessment:

- "Hazardous and Offensive Development Application Guidelines, Applying SEPP 33";
- "Assessment Guideline, Multi-Level Risk Assessment";
- "Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Planning";
- "Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis"; and
- "Hazardous Industry Planning Advisory Paper No. 10 – Land Use Safety Planning".

## 5.1 LEVEL OF ASSESSMENT

The Multi-Level Risk Assessment approach has been developed and recommended by the Department of Planning (DoP). It relies on a systematic and analytical approach to the identification and analysis of hazards and the quantification of offsite risks assessing any risk tolerability and landing use safety implications. The DoP has advocated a merit-based approach, wherein the level and extent of analysis must be appropriate to the hazards present and therefore, need only progress to the extent necessary for the particular case.

There are three levels of assessment specified in the Multi-Level Risk Assessment (DoP 2011c) document and they are listed below.

**Level 1 – Qualitative Analysis:** primarily based on the hazard identification techniques. A level 1 assessment can be justified if the analysis of the facility demonstrates Societal Risk in the *negligible zone* and there are no potential accidents with significant off-site consequences.

**Level 2 – Partially Quantitative Analysis:** using hazard identification and the focused quantification of key potential off-site risk contributors. A level 2 assessment can be justified when the Societal Risk estimates fall within the middle *ALARP zone* or if one or more significant risk contributors had been identified but the frequency of risk contributors having off-site consequences is relatively low.

**Level 3 – Fully Quantitative Risk Analysis:** based on the full and detailed quantification of risks, consistent with HIPAP No. 6. A level 3 assessment is required where the Societal Risk from the facility estimates fall within the *intolerable zone* or where there are significant off-site risk contributors, and a level 2 assessment is unable to demonstrate that the risk criteria will be met.

The level of assessment required is dependent on a risk-based method which relies on broad estimations of consequences and likelihood of accidents. A risk classification and prioritisation technique is often used to determine the level of assessment. This technique provides the

estimation of individual and societal fatality risk which can be compared against the given criteria. A Level 2 Partially Quantitative Analysis has been carried out.

## 5.2 METHODOLOGY

The procedures adopted by this study for assessing hazardous impacts involve the following steps:

**Step 1**: Hazard identification;
**Step 2**: Risk analysis (consequence and probability estimations); and
**Step 3**: Risk evaluation and assessment against specific criteria.

The following sections of the report discuss the hazard identification process as prescribed by the Department of Planning in the documents *Multi-Level Risk Assessment* (DoP 2011c) and *Hazardous Industry Planning Advisory Paper No 6* (*HIPAP No. 6) – Guidelines for Hazard Analysis* (DoP 2011b).

### 5.2.1 Hazard Identification

This is the first step in the risk assessment. It involves the identification of all theoretically possible hazardous events as the basis for further quantification and analysis. This does not in any way imply that the hazard identified or its theoretically possible impact will occur in practice. Essentially, it identifies the particular characteristics and nature of hazards to be further evaluated in order to quantify potential risks.

To identify hazards, a survey of operations was carried out to isolate the events which are outside normal operating conditions and which have the potential to impact outside the boundaries of the site. In accordance with HIPAP No. 6, these events do not include occurrences that are a normal part of the operation cycles of the site but rather the atypical and abnormal, such as the occurrence of a significant liquid spill during product transfer operations.

A qualitative approach in accordance with the Australian/New Zealand Standard 31000:2009 – "*Risk Management – Principles and Guidelines*" has been established to assist in the identification, selection and prioritisation of hazardous scenarios for further investigation and analysis.

### 5.2.2 Risk Analysis

After a review of the events identified, selected and prioritised in the hazard identification phase and the identification of prevention/protection measures incorporated into the design of the site, events considered to have the potential to result in significant off-site impacts or which have the potential to escalate to larger incidents are carried over to the next stage of analysis. Discussions are also made at this phase of this assessment to determine whether some of the identified hazardous scenarios warrant further analysis. The next phase involves conducting a consequence and a frequency estimation exercise.

#### 5.2.2.1 Consequence Estimation

This aspect involves the analysis and modelling of the credible events carried forward from the hazard identification process in order to quantify their impacts outside the boundaries of the site.

In this case, these events typically include fire and the potential effects on people and/or damage to property.

#### 5.2.2.2 Probability Likelihood Estimation

If necessary, the likelihood of incidents are quantified by adopting probability and likelihood factors derived from published data.

### 5.2.3 Risk Evaluation and Assessment against Specific Criteria

The risk analysis includes the assessment of consequences for each hazardous event and the frequencies of each initiating failure. The results of these consequence calculations together with the probabilities and likelihood figures estimated were then compared against the accepted criteria, as specified by DoP. Whether it is considered necessary to conduct the predictions would depend on the probability figures, likelihood estimations, and if the risk criteria are exceeded.

## 5.3 HAZARD ANALYSIS ASSESSMENT CRITERIA

The risk criteria applied by Department of Planning are published in the document *Hazardous Industry Planning Advisory Paper No 4* (HIPAP No. 4) – *Risk Criteria for Land Use Safety Planning* (DoP 2011a). The following is a general discussion of the criteria that is used to assess the risk of a development on the surrounding community and environment.

### 5.3.1 Individual Fatality Risk Levels

The following paragraphs have been reproduced from HIPAP No. 4 to describe individual fatality risk levels:

> *"People in hospitals, children at school or old-aged people are more vulnerable to hazards and less able to take evasive action, if need be, relative to the average residential population. A lower risk than the one in a million criteria (applicable for residential areas) may be more appropriate for such cases. On the other hand, land uses such as commercial and open space do not involve continuous occupancy by the same people.*
>
> *The individual's occupancy of these areas is on an intermittent basis and the people present are generally mobile. As such, a higher level of risk (relative to the permanent housing occupancy exposure) may be tolerated. A higher level of risk still is generally considered acceptable in industrial areas."* (DoP 2011a)

The risk assessment criteria for individual fatality risk are presented below.

Table 5-1: Individual Fatality Risk Criteria (HIPAP No. 4)

| Land Use | Risk Criteria x $10^{-6}$ (per year) |
|---|---|
| Hospitals, schools, childcare facilities, old age housing | 0.5 |
| Residential, hotels, motels, tourist resorts | 1 |
| Commercial developments including retail centres, offices | 5 |

| | |
|---|---|
| and entertainment centres | |
| Sporting complexes and active open space | 10 |
| Industrial | 50 |

Figures in the table above have been utilised in the assessment.

### 5.3.2 Injury Risk Levels

HIPAP No. 4 provides guideline criteria for heat of radiation, explosion overpressure and toxic exposure. The quoted requirements from the referenced document have been summarised as follows:

- Guideline criteria for heat of radiation:

  *"Incident heat flux radiation at residential and sensitive use areas should not exceed 4.7 kW/m$^2$, at frequencies of more than 50 chances in a million per year."*

- Guideline criteria for explosion overpressure:

  *"Incident explosion overpressure at residential and sensitive use areas should not exceed 7 kPa at frequencies of more than 50 chances in a million per year."*

- Guideline criteria for toxic exposure:

  *"Toxic concentrations in residential areas should not exceed a level that would be seriously injurious to sensitive members of the community following a relatively short period of exposure at maximum frequency of 10 in a million per year."*

  and

  *"Toxic concentrations in residential areas should not cause irritation to the eyes or throat, coughing or other acute physiological responses in sensitive members of the community over a maximum frequency of 50 in a million per year."*

Please note that a risk hazard assessment only examines events that are considered to have the potential for significant off-site consequences and may not entirely reflect all variations in people's vulnerability to risk.

### 5.3.3 Risk of Property Damage and Accident Propagation

HIPAP No. 4 indicates that siting of a hazardous installation must account for the potential for propagation of an accident, causing a "domino" effect on adjoining premises. This risk would be expected within an industrial estate where siting of hazardous materials on one site may potentially cause hazardous materials on an adjoining premises to further develop the size of the accident.

The criteria for risk of damage to property and of accident propagation are stated as follows:

*"Incident heat flux at neighbouring potentially hazardous installations or at land zones to accommodate such installations should not exceed a risk of 50 in a million per year for the 23 kW/m$^2$ heat flux level."*

and

*"Incident explosion overpressure at neighbouring potentially hazardous installations, at land zoned to accommodate such installations or at nearest public buildings should not exceed a risk of 50 in a million per year for the 14 kPa explosion overpressure level."*

### 5.3.4 Criteria for Risk Assessment to the Biophysical Environment

The assessment of the ultimate effects from toxic releases into the natural ecosystem is difficult, particularly in the case of atypical accidental releases. Consequence data is limited and factors influencing the outcome variable and complex. In many cases, it may not be possible or practical to establish the final impact of any particular release. Because of such complexity, it is inappropriate to provide generalised criteria to cover any scenario. The acceptability of the risk will depend upon the value of the potentially affected zone or ecosystem to the local community and wider society.

The suggested criteria for sensitive environmental areas relate to the potential effects of an accidental release or an emission on the long-term viability of the ecosystem or any species within it and are expressed as follows:

*"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the effects or consequences of the more likely accidental emissions may threaten the long-term viability of the ecosystem or any species within it."*

and

*"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the likelihood or probability of impacts that may threaten the long-term viability of the ecosystem or any species within it is not substantially lower than the existing background level threat to the ecosystem."*

## 5.4 Assessment Criteria Applicable to the Proposed Development Application

In accordance with *HIPAP No 4 Risk Criteria for Land Use Safety Planning*, the following discussion of the risk assessment criteria considered applicable to the proposed development has been provided.

### 5.4.4 Heat-Flux Radiation Criteria

The effects of various heat fluxes (radiation) as a result of a fire incident are given in Table 5-2. The HIPAP No 4 paper (DoP 2011a) suggests a heat flux of 4.7 kW/m$^2$ and a frequency of 50 in a million per year to be used as the risk injury criterion for thermal effects at residential and sensitive use areas.

Table 5-2: Consequences of Heat Radiation

| Heat Radiation ($kW/m^2$) | Effect |
|---|---|
| 1.2 | Received from the sun at noon in summer |
| 2.1 | Minimum to cause pain after 1 minute |
| 3 | Based on correspondence with NSW Fire and Rescue heat flux should not exceed 3 $kW/m^2$ in areas required for fire fighter personal access by NSW Fire and Rescue in the event of an incident |
| 4.7 | Will cause pain in 15–20 seconds and injury after 30 seconds' exposure (at least second degree burns will occur) |
| 12.6 | • Significant chance of fatality for extended exposure. High chance of injury.<br>• Causes the temperature of wood to rise to a point where it can be ignited by a naked flame after long exposure.<br>• Thin steel with insulation on the side away from the fire may reach a thermal stress level high enough to cause structural failure. |
| 23 | • Likely fatality for extended exposure and chance of fatality for instantaneous exposure.<br>• Spontaneous ignition of wood after long exposure.<br>• Unprotected steel will reach thermal stress temperatures which can cause failure.<br>• Pressure vessel needs to be relieved or failure would occur. |
| 35 | • Cellulosic material will pilot ignite within one minute's exposure.<br>• Significant chance of fatality for people exposed instantaneously. |

### 5.4.5 Explosion Overpressure Criteria

HIPAP No. 4 stipulates the following criteria for explosion overpressures:

> "*Incident explosion overpressures at residential and sensitive land use areas should not exceed 7 kPa at frequencies of more than 50 chances in a million per year.*"
>
> and
>
> "*Incident explosion overpressures at neighbouring potentially hazardous installations, at land zoned to accommodate such installations or at nearest public buildings should not exceed a risk of 50 in a million per year for the 14 kPa explosion overpressure level.*"

### 5.4.6 Toxic Criteria

The toxic exposure criteria can be deemed applicable if unnecessary toxic emission releases are caused as a result of the operations on site. HIPAP No. 4 indicates that citing of potentially hazardous developments also needs to consider the risk from accidental releases into the biophysical environment.

The National Institute for Occupational Safety and Health (NIOSH) and the American Industrial Hygiene Association (AIHA) provides the following 4 categories of health impact criteria which are of relevance during an emergency event:

- Immediately Dangerous to Life or Health (IDLH).
- Emergency Response Planning Guideline 1 (ERPG1).
- Emergency Response Planning Guideline 2 (ERPG2).
- Emergency Response Planning Guideline 3 (ERPG3).

The purpose of the values given for each of these limits for a particular chemical is to assess the capabilities of mitigation safeguards and emergency or accident response plans for the workplace.

The IDLH limit is defined by the Occupational Safety and Health Administration (OSHA) as:

> *"An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere."*

The following are definitions for each ERPG level as defined by American Industrial Hygiene Association, 2011 Emergency Response Planning Guidelines (ERPG) and Workplace Environmental Exposure Levels (WEEL) Handbook:

> *"The ERPG-1 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient adverse health effects or without perceiving a clearly defined objectionable odour.*
>
> *The ERPG-2 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair an individual's ability to take protective action.*
>
> *The ERPG-3 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects."*

The ERPG-2 level can be considered synonymous to the IDLH limit, although it has been observed that both slightly vary from each when comparing values for each contaminant. For this reason, both IDLH and ERPG limits were required to be compared with in this assessment.

The above needs to comply with the following risk criteria:

- 10 in a million per year at dwellings; and
- 50 in a million per year at industrial premises.

### 5.4.7 Biophysical Environment Risk Criteria

The site is located within an established industrial area. The proposed area would be fully paved.

Potential contaminants are mitigated through storing materials undercover. Spill kits would be provided at all areas that are identified to be prone to spills. A housekeeping inspection would be undertaken regularly to ensure that no releases impact the biophysical environment or provide a load that could initiate an unnecessary hazardous event.

Best practice in housekeeping and operational procedures would be implemented on site. Given this consideration, the proposed development would not introduce any additional risk that may threaten the long-term viability of the development and its effect to the local environment. Consequently, the DoP-based criteria have been determined to be readily satisfied and no further analyses or discussions were considered necessary.

## 5.5 HAZARD IDENTIFICATION

It has been identified in Section 3.1 that out of all the dangerous goods class none are required to be further assessed.

Scenarios for further assessment are limited to combustible material storage on site as per the definitions in the NSW Fire and Rescue 2020 Fire Safety in Waste Facilities Guidelines.

Further investigation would require additional frequency and consequence estimations established. The outcomes from this investigation are compared with the criteria outlined within the relevant Hazardous Industry Planning Advisory Papers.

### 5.5.4 Hazardous Materials

Included in this section is a summary of the hazardous materials, which is included to outline the information utilised in the assessment.

#### 5.5.4.1 LPG

Liquefied Petroleum Gas is a Class 2.1 Flammable Gas Dangerous Good and is not classified as Hazardous according to criteria or Safe Work Australia. It is a colourless, odourless gas (typically with added odour) in compressed liquid form in a pressure container and is mainly composed of:

- Ethane (typically 0-10%);
- Propane (typically 50-90%);
- Propene (typically 0-20%);
- Butane (typically 0-50%);
- Butane (typically 0-5%); and
- Ethyl Mercaptan (odorant - typically 25 mg/kg).

The flammability limit range is typically between 1.5% and 9.6% in air (v/v). Ignition sources including flames and static discharges should be kept away. In the event of a fire, do not extinguish the fire but cut off the gas supply and allow the gas to burn out. Use water to keep vessels cool or tank metal may weaken and result in explosion.

Hazardous combustion products include traces of carbon monoxide and nitrogen oxides while smoke, fumes, carbon monoxide and aldehydes may be generated during incomplete combustion.

Quantities of LPG are minor stored in cylinders for mobile equipment, stored outside in cages. Risks of LPG on site is considered minor. No further assessment is considered necessary.

#### 5.5.4.2 Storage of Combustible Materials

Combustible Materials on site are:

- Metal with combustible contaminants; and
- Plastics.

This includes the incoming stockpile of mixed metal waste and the stockpile of plastic insulation material from wires.

### 5.5.5 Hazardous Events

The identification of possible hazardous events for this facility has been prepared with reference to available literature. A comprehensive list of credible and significant incidents identified is summarised in a Hazard Identification Chart provided in the following section.

### 5.5.6 Hazard Identification Chart

A Hazard Identification Chart has been prepared for the proposed site based on operating scenarios that are relevant to the proposed development.

The chart consists of six (6) columns, which are described as follows:

<u>Column 1</u>
Heading: Functional/Operation Area
The area of the site involved with the potential event is listed. If the entire site is involved, the source of risk is also identified.

<u>Column 2</u>
Heading: Possible Initiating Event
The individual events that are considered to be theoretically possible, likely or realistic are then listed. Where the possible consequences are similar the events are listed together.

<u>Column 3</u>
Heading: Possible Consequences
The outcomes of an event or events if it / these occurred are listed.

<u>Column 4</u>
Heading: Preliminary Scores for the Consequence, Likelihood and the Overall Risk
Using the modified consequence and likelihood qualitative analysis matrix from Australian/New Zealand Standard 31000:2009 – "Risk Management", scores are allocated for each event based on the descriptions in Columns 2 and 3. This modified 6×6 analysis matrix has been prepared by Pinnacle Risk Management.

Column 5

Heading: Prevention/Protection Measures

The measures designed into the functional/operation area and the site are listed. These measures may include for example safeguards, design features, management methods and/or operator training.

Column 6

Heading: Residual Scores for the Consequence, Likelihood and the Overall Risk

With consideration to the scores from Column 4, the adjusted scores according to the prevention and protection measures in Column 5. These scores illustrate the overall risk of the specific scenario.

The referenced analysis matrix for the consequence and likelihood qualitative analysis has been provided as Table 5-3. This matrix is accompanied by table containing a list of descriptions for consequence ratings, which has been provided as Table 5-4

The Hazard Identification Chart is presented in Table 5-5.

Table 5-3: Modified Consequence and Likelihood Matrix for Qualitative Analysis

| | | | | | | |
|---|---|---|---|---|---|---|
| Frequent >1/yr | II | II | I | I | I | I |
| Probable $>10^{-1}$ to 1/yr | III | II | II | I | I | I |
| Possible $>10^{-2}$ to $10^{-1}$/yr | III | III | II | II | I | I |
| Unlikely $>10^{-4}$ to $10^{-2}$/yr | III | III | III | III | II | I |
| Very Unlikely $>10^{-6}$ to $10^{-4}$/yr | III | III | III | III | III | II |
| Extremely Unlikely $<=10^{-6}$/yr | III | III | III | III | III | III |
| **Likelihood** **Consequence** | Minor | Significant | Severe | Serious | Extremely Serious | Catastrophic |

Note: This matrix is a modified version of the qualitative analysis matrix published in the Australian/New Zealand Standard 31000:2009 – "*Risk Management*".

Region **I** High, synonymous to the Intolerable Region as per HIPAP

Region **II** Medium Risk, or beginning of ALARP or As Low As Reasonably Practicable as per HIPAP

Region **III** Low, synonymous to Negligible as per HIPAP

Table 5-4: Matrix Based Assessment Consequence Definitions

| | Minor | Significant | Severe | Serious | Extremely Serious | Catastrophic |
|---|---|---|---|---|---|---|
| **Safety and Health** | One minor injury, First Aid | Recordable or single MTI | Multiple MTI or one LTI | Permanent disability casualty or multiple LTI | Multiple permanent disabilities or one fatality | Multiple fatalities |
| **Environment** | Very minor pollution. No offsite escape of material (contained within the operational areas). On site nuisance value only. | Minor local pollution. Nuisance offsite effect, typically of short duration, e.g. noise, odours, dust and/or visible plumes for less than one hour. | Evident pollution, local concern. Minimal duration offsite effects (e.g. waterway slightly discoloured, turbid etc around the point of release with no or very few fish killed). | Significant local pollution. For example, waterways discoloured 10s of metres, fire or smoke affecting people near to the site. | Major local pollution. Observable offsite effect (e.g. waterways discoloured 10s to 100s of metres for a few weeks with a significant number of aquatic life adversely affected). | Extremely severe pollution. Ecosystems at high risk of destruction. Only resolved via long term solutions (potentially taking years). |
| **Public Relations** | Minor issue, one complaint | Local issue, 10 complaints | Local media, 100 complaints | Regional or state media | Wide media national coverage | Headlines, corporate damage |
| **Financial Impact** | <$25,000 | $25,000 to $100,000 | >$100,000 to $1 million | >$1 million to $20 million | >$20 million to $100 million | >$100 million |

Table 5-5: Event/Consequence Analysis Table

| Functional / Operational Area | Possible Initiating and Chain of Events | Possible Consequence(s) | Preliminary Scores for Consequence, Likelihood & Risk | Prevention/Protection Measures and Controls | Residual Scores for Consequence, Likelihood & Risk |
|---|---|---|---|---|---|
| Stockpiles | • Materials in the metal/plastic pile oxidized and the resulting heat from that chemical reaction became trapped; finally storing up enough heat to catch fire.<br>• Fire can potentially occur due to lithium ion battery ignition, or from oils and other fibrous materials. | Stockpile Fire, Spread of fire to other areas | Unlikely, Severe, Region III | • Material screening to remove batteries/flammable materials.<br>• Fire services | Very Unlikely, Significant, Region III |
| Stormwater Drainage Areas | • Spill of chemicals onto stormwater drainage | Discharge of Hazardous Liquids to Environment | Unlikely, Significant, Region III | • Safe procedures for transfer of materials to minimise spills<br>• Stormwater drains have been appropriately designed – all waterproofed and location selection appropriate<br>• Occasional routine checks and audits by site management to identify and rectify issues<br>• Safety procedures and management system in place to minimise incidents<br>• Procedures to stop operations if critical equipment are compromised, damaged or inoperable<br>• Training, awareness and education of employees, visitors and contractors | Extremely Unlikely, Minor, Region III |

Table 5-5: Event/Consequence Analysis Table

| Functional / Operational Area | Possible Initiating and Chain of Events | Possible Consequence(s) | Preliminary Scores for Consequence, Likelihood & Risk | Prevention/Protection Measures and Controls | Residual Scores for Consequence, Likelihood & Risk |
|---|---|---|---|---|---|
| High and Low Voltage Electrical Systems, Plant Control Systems | • Electrical faults<br>• Damage due to human error<br>• Arson damage<br>• Initiate fire on transformer | Building Fire, Spread of Fire to Other Fire-Prone Areas | Very Unlikely, Severe, Region III | • Routine maintenance checks of the high voltage electrical systems on site<br>• Electrical cabinets in control rooms and plant equipment are installed, operated and maintained in accordance with the relevant Australian Standards<br>• Fire services available to control fire from these systems<br>• Safety procedures in place to minimise incidents on site<br>• Procedures to stop operations if critical equipment are compromised, damaged or inoperable<br>• Training, awareness and education of employees, visitors and contractors | Extremely Unlikely, Minor, Region III |

Table 5-5: Event/Consequence Analysis Table

| Functional / Operational Area | Possible Initiating and Chain of Events | Possible Consequence(s) | Preliminary Scores for Consequence, Likelihood & Risk | Prevention/Protection Measures and Controls | Residual Scores for Consequence, Likelihood & Risk |
|---|---|---|---|---|---|
| Natural Hazard Effects on Entire Site | • Destruction of Buildings<br>• Flood | Discharge of Hazardous Liquids to Environment | Very Unlikely, Serious, Region III | • Flood response management plan<br>• Equipment, machinery and building structures are built in accordance with Australian Standards to be as structurally strong and solid as much as economically possible and practicable<br>• Weather warnings accounted by site management to prevent operation during significantly disastrous climate conditions<br>• Emergency procedures implemented for safe evacuation and termination of operations<br>• Training, awareness and education of employees, visitors and contractors | Very Unlikely, Serious, Region III |
| Extraneous Uncontrolled Off-Site Events Affecting Entire Site | • Aircraft crash | Fire, Release of Flammable and Toxic Gases, and Explosion | Extremely Unlikely, Extremely Serious, Region III | • No on-site prevention / protection measures aside from warning and observation by staff/management on site. Prevention measures are expected to be in place by management of aircraft operators | Extremely Unlikely, Extremely Serious, Region III |

Further details of the prevention and protection measures have been provided in Section 6.

### 5.5.7 Hazards Identified for Further Analysis

It has been identified that hazardous events expected to occur on site have minimal risk, given that none of the scenarios identified in Table 5-5 do not indicate a high residual risk being present.

However, the following hazardous scenarios (which were obtained from the event / consequence tables) have been examined further:

- Scenario 1 – Mixed metal waste stockpile fire
- Scenario 2 – Plastic waste stockpile

Details of each assessed scenario have been provided as follows.

The heat radiation modelling was undertaken using both TNO Effects (Version 7.6) and modelling using the view factor where a fire rated wall was present. TNO Effects is a modelling software developed by TNO Built Environment and Geoscience, situated in the Netherlands. The software is able to predict both physical effects and consequences of a specific incident from the proposed development.

TNO Effects was used to obtain overpressure and heat radiation contours based on combustion rates of the materials involved. The radiation contours obtained from TNO Effects were mapped from the perimeter of the source area.

#### 5.5.7.1 Scenario 1 – Mixed Metal Stockpile Fire

The following assumptions were deemed credible and utilised for estimating the consequence resulting from a fire with the metal shredder stockpile that could occur on site:

- Assuming 3 tonnes of metal the total mass of a worst case mixed metal stockpile is on fire;
- A surface area of 5 $m^2$ was assumed as the surface area (based on a worst case stockpile area); and
- A substitute chemical, Ethylene dichoride, was used as input for the pool fire given that their similarities in heat of combustion properties (Note: Heat of Combustion for Metal is 7,500 J/g (Cryogenics Division Institute for Basic Standards National Bureau of Standards Boulder, Colorado 80302, 1973) and Ethylene dichloride 8,000 J/g (TNO Effects)).

The following distances were obtained for the model:

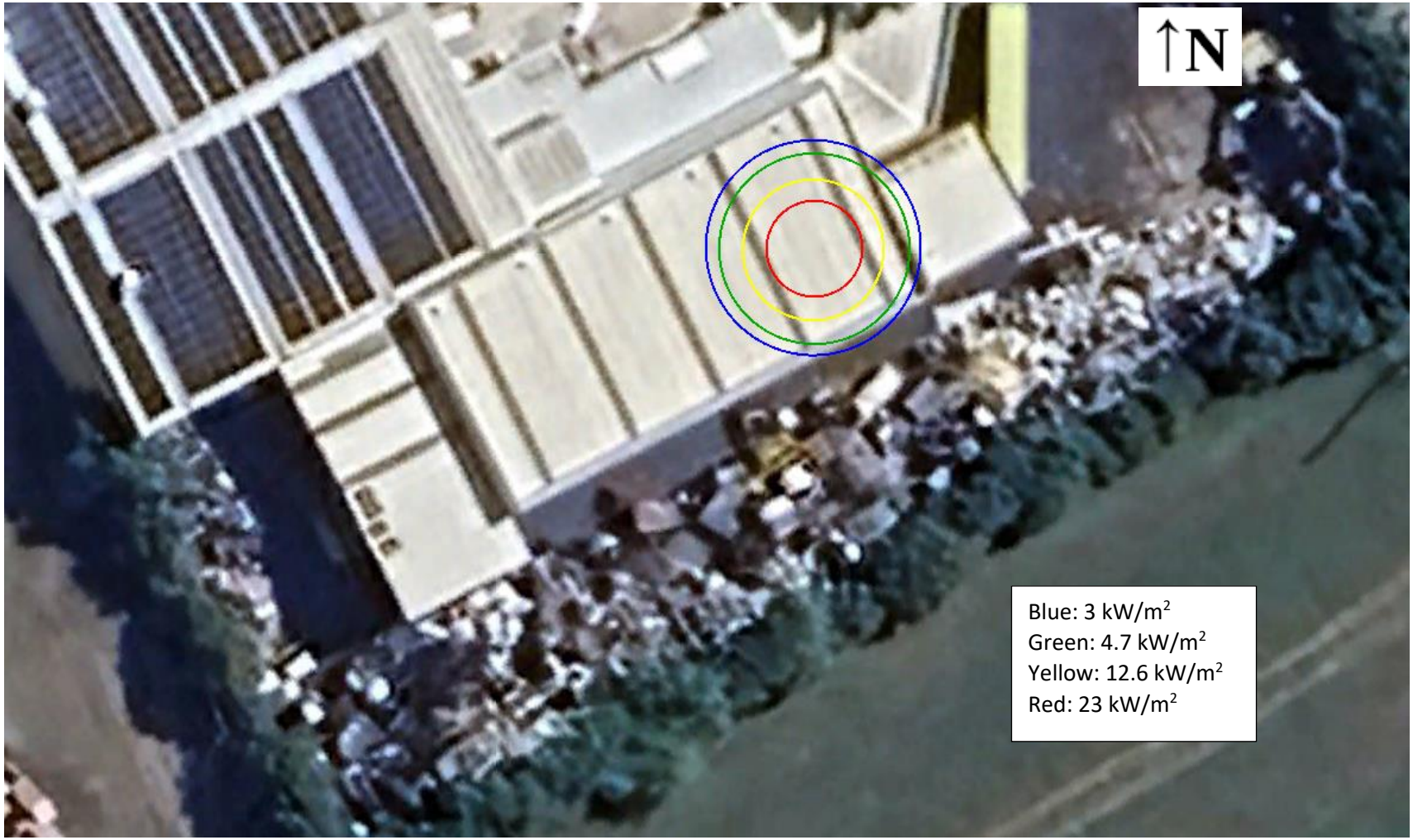
- For the 3 kW/$m^2$ heat contour: 6.8 metres.
- For the 4.7 kW/$m^2$ heat contour: 6.1 metres.
- For the 12.6 kW/$m^2$ heat contour: 4.5 metres.
- For the 23 kW/$m^2$ heat contour: 3.1 metres.

No residential receptors were within the distances outlined above.

No residential, industrial, commercial receptors or any other sensitive receptors were within the distances outlined above.

Figure 5-1 below provides an illustration of the extent of the outlined heat of radiation contour on an aerial map.

Figure 5-1: Heat Radiation Contours for the Processed Metal Stockpile Fire Scenario



#### 5.5.7.2 Scenario 2 – Plastic Stockpile Fire

The following assumptions were deemed credible and utilised for estimating the consequence resulting from an explosion that could occur on site:

- Assuming 2 tonnes of material the total mass of material is on fire;
- A surface area of 4 $m^2$ was assumed as the surface area (based on the stockpile area); and
- A substitute chemical, Gasoline, was used as input for the pool fire given that their similarities in heat of combustion properties (Note: Heat of Combustion for Plastic (PE) is 47,740 J/g (Costiuc, Tierean, Baltes, & Patachia, 2015)).

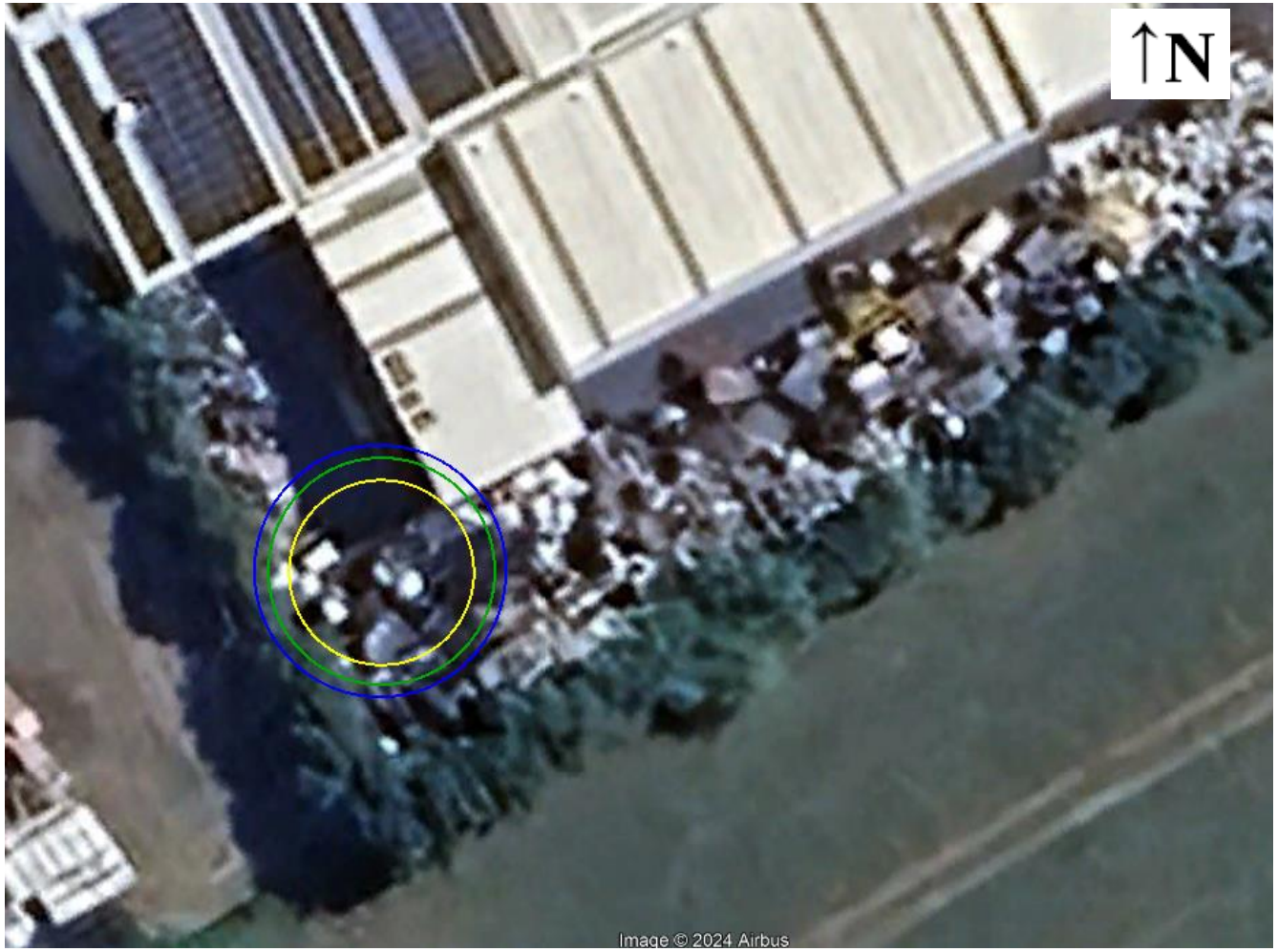
The following distances were obtained for the model:

- For the 3 $kW/m^2$ heat contour: 7.0 metres.
- For the 4.7 $kW/m^2$ heat contour: 6.3 metres.
- For the 12.6 $kW/m^2$ heat contour: 5.1 metres.

No residential, industrial, commercial receptors or any other sensitive receptors were within the distances outlined above.

Figure 5-2 below provides an illustration of the extent of the outlined heat of radiation contour on an aerial map.

Figure 5-2: Heat Radiation Contours for the Plastic Stockpile Fire Scenario




Blue: 3 kW/m$^2$
Green: 4.7 kW/m$^2$
Yellow: 12.6 kW/m$^2$

## 5.6 DISCUSSION AND RECOMMENDATIONS

Results from the detailed quantitative analysis provided in Section 5.5.7. shows that the criteria stipulated within the HIPAP guidelines for the following scenarios have been met for all significant sources of hazard risks on site for heat radiation flux levels for both the adjacent commercial / industrial buildings and the nearest sensitive land uses.

After having examined the findings of the quantitative hazard analysis, the following recommendations have been compiled to emphasise some of the proposed prevention / protection measures and controls outlined in previous sections, pointing out the significance of these controls with regards to the outcomes from each significantly hazardous scenario examined in Section 5.5.7.

- Training, awareness and education of all employees on site, to ensure that the following performance objectives are met:
  - Educate all persons entering the site of the hazards associated with the proposed operations and activities on site, provide an indication of what actions are prohibited and give guidance. This is promoted by implementing site inductions, establishing supervision of contractors and visitors at all times for significant projects or tasks. This includes visitors of the education centre on site.
  - Ensure that all equipment are in good working condition at all times, given that the compromise of their working condition can compromise the safety of all persons on site and its potential adjacent neighbouring land uses. This is established through routine maintenance checks, and regular audits of critical process equipment.

- Establish a system wherein a Job Safety Analysis (JSA), Proposed Work Method Statements or other similar systems which achieves (but is not limited to) the following objectives:
  - Changes to the operations of the site – how these changes may affect the risk elements on site.
  - Works proposed to be conducted by contractors – similarly, how the scope of works of each contractor entering a site would affect the risk on site.
  - Promote a system that establishes a mindset or an attitude to all employees on site to prioritise safety.

- Promoting minor safety aspects such as providing dedicated pedestrian pathways, discouraging the use of mobile phones while in forklift traffic areas, providing appropriate signage for critical areas, and enforcing speed limits.

The following **Fire Safety** safeguards are recommended:
- Annual fire safety statement inspections every 6 months;
- MCPs (Manual Call Points) are to be installed throughout the site in positions where workers are present;

- A hose reel system at high risk locations is to be provided in accordance with the NCC and AS 2441–2005/Amdt 1-2009;
- Fire extinguishers to be provided at the site in accordance with the NCC and AS 2444–2001;
- Fire services at the site are to be maintained in accordance with AS 1851;
- Emergency lighting and exit signage are to be provided in accordance with the NCC and AS 2293;
- The location of the stormwater isolation valve will be clearly indicated on a future site plan and that operating instructions will be provided at that location on an all-weather fade-resistant sign prior to the construction certificate being released.
- A comprehensive Emergency Plan and Flood Emergency Response Plan to be developed;
- Specific on site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels;
- Strict control of ignition sources to be enforced on site;

# 6. ENVIRONMENTAL SAFEGUARDS

The proposed design and operation of the facility would typically include environmental safeguards to provide sufficient protection to the site such that if a pollution incident or an emergency event occurred, there would be minimal impact to the natural environment or nuisance caused to the amenity of adjacent occupiers of neighbouring premises.

These safeguards would enable the majority of the untoward events associated with storage, handling and process operations to be contained avoiding pollution incidents or off-site hazards. This section of the report provides a summary of these environmental safeguards.

All of the procedures and environmental safeguards outlined would be implemented as part of the site's operational activities. A site operational Environmental Management Plan would be prepared for the facility.

It is understood that commitments have been made to prepare the following controls, procedures, and plans, which are all considered environmental safeguards:

- Internal Emergency Response System;
- Promoting awareness and safety across the organisational structure of the site, including its contractors and visitors;
- Safe forklift operating procedure;
- Routine maintenance checks and safety inspections;
- Spill procedures; and
- Environmental housekeeping procedures.

As part of these procedures, it is essential that appropriate physical controls are provided on-site in close proximity to the critically sensitive areas. This would include:

- Means of isolating a spill would be held in designated areas and clearly signposted;
- Location of combustible materials to assist in reducing the hazard to fire fighters and to maximise the ability to control fires;
- Declaration of smoking policy and clearly signposted;
- It is recommended that an Emergency Response Plan (to contain an emergency services information package (ESIP) in the format that NSW Fire and Rescue accepts) located at the entrance to the general office.

# 7. CONCLUDING REMARKS

This PHA has been prepared in accordance with the documents entitled *"Multi-Level Risk Assessment"*, "*Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning"* (HIPAP No. 4)" and the "*Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis"* (HIPAP No. 6), all published by the Department of Planning.
The results from this assessment determined that the site's proposed operations are not an offensive or hazardous industry.

Main hazards from the site are *metals with combustible contaminants* which is the mixed metal waste stockpile prior to sorting and *plastic* which is primarily the stockpile of plastic insulation from wire stripping. The worst-case events from these hazards are largely contained within the site or do not pose a significant risk to neighbouring sites.

Chemical storage does not pose a significant risk, and does not trigger Chapter 3 (hazardous and offensive development) of State Environmental Planning Policy (Resilience and Hazards) 2021.

It is the conclusion of this assessment that the proposed site and its operations would meet all the safety requirements stipulated by the Department of Planning. Hence, this facility would not be considered an offensive or hazardous development in accordance with the HIPAP guidelines.

This concludes this Preliminary Hazard Analysis.

Prepared by:

| | | |
|---|---|---|
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# 9. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use by Shine Motor Corporation Pty Ltd as per our agreement for providing environmental assessment services. Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that required by law) in relation to the information contained within this document.

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